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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/562,471

11/13/2006

John Graeme Houston

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DeMont & Breyer, LLC

100 Commons Way, Ste. 250

Holmdel, NJ 07733

EXAMINER

TANNER, JOCELYN C

ART UNIT

PAPER NUMBER

3731

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11/13/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/562,471	Applicant(s) HOUSTON ET AL.	
	Examiner JOCELIN C. TANNER	Art Unit 3731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,29-31,33-44 and 46-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,29-31,33-44 and 46-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/07/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the Amendment filed 18 August 2009.

Claims 1-4, 5, 6, 29-31, 33-44 and 46-52 are currently pending. The Examiner acknowledges the amendments to claims 51 and 52, the cancellation of claims 4, 7-28, 32 and 45.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim **Claims 1-3, 5, 6, 29-31, 33-44 and 46-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Houston et al. (EP 1254645A1) in view of Palmaz et al. (US Patent No. 6,190,404).**

2. Regarding claim 1, Houston et al. discloses an internal formation for a conduit, the formation having a helical-flow inducing means or a "longitudinally extending member" (12) adapted to extend along an inside surface of at least a portion of the length of the conduit, and the formation effects spiral flow of a fluid flowing through the conduit (column 1, lines 56-58, column 2, lines 10-12, 15-10, FIG 1). However, Houston et al. fails to disclose a 20° angle of the first surface subtending with a diameter of the conduit extending through a portion of the profile of the longitudinally extending member.

Art Unit: 3731

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided a 20° angle of the first surface subtending with a diameter, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Houston et al. discloses helical grooving and/or ridging or “longitudinally extending member” which may be of any cross-sectional shape and size [0009], however, Houston et al. fails to expressly disclose the longitudinally extending member having an asymmetric profile in a direction transverse of the longitudinal axis of the member.

Palmaz et al. teaches a stent having grooves within or on the inner surface that may be asymmetrical (column 5, lines 45-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the ridges of Houston et al., with an asymmetric profile, as taught by Palmaz et al., for the predictable result of inducing helical flow.

3. Regarding claim **2**, Houston et al. discloses a longitudinally extending member (12) that extends helically along the length of the conduit (column 2, lines 1-2 and 7-9, FIG. 1).

4. Regarding claim **3**, Houston et al. discloses a longitudinally extending member (12) extending helically along the internal side wall of the conduit.

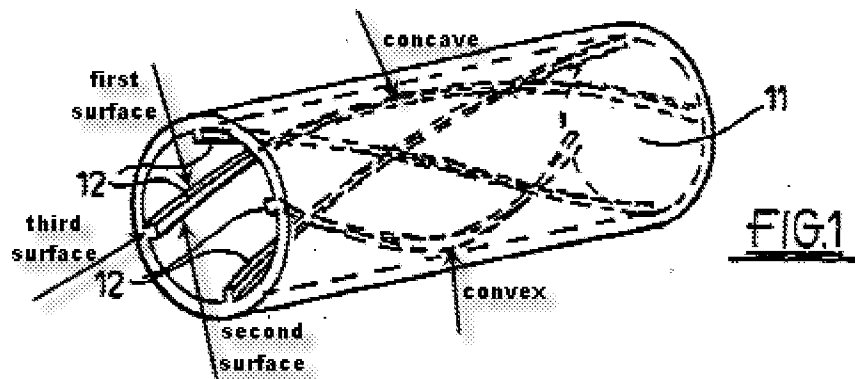
Art Unit: 3731

5. Regarding claim **5**, Houston et al. discloses a first surface of the longitudinal member to have a planar portion and/or a curved portion (FIG. 1). Please see marked up figure below.

6. Regarding claim **6**, Houston et al. discloses a second surface having a planar portion and/or a curved portion (FIG. 1). Please see marked up figure below.

7. Regarding claim **29**, Houston et al. discloses a second surface having a curved portion, the curved portion being concave or convex, or a combination of concave and convex (FIG. 1). Please see marked up figure below.

8. Regarding claim **30**, Houston et al. discloses a first surface having a curved portion, the curved portion being concave or convex, or a combination of concave and convex (FIG. 1). Please see marked up figure below.



9. Regarding claim **31**, the combination of Houston et al. and Palmaz et al. discloses all of the limitations previously discussed except for a first surface subtending with the diameter of the conduit extending through the portion of the profile of the

Art Unit: 3731

longitudinally extending member at a smaller angle than the second surface. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided a smaller subtending angle of the first surface, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

10. Regarding claim **33**, the combination of Houston et al. and Palmaz et al. discloses all of the limitations previous discussed except for the first surface subtending the diameter of the conduit with an angle between 5° and 15°.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected a subtending angle having a value between 5° and 15°, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

11. Regarding claim **34**, the combination of Houston et al. and Palmaz et al. discloses all of the limitations previous discussed except for an angle that the first surface subtends with the diameter of the conduit being substantially 10°.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected a subtending angle having a value of 10°, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

12. Regarding claim **35**, the combination of Houston et al. and Palmaz et al. discloses all of the limitations previous discussed except for a distance along the

Art Unit: 3731

internal surface of the conduit from the diameter to the point at which the second surface meets the internal surface of the conduit to be substantially 25% of the internal width of the conduit. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have constructed the distance along the internal surface to the point at which the second surface meets the internal surface to be 25% of the internal width, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

13. Regarding claim **36**, Houston et al. discloses first and second surfaces that extend from the internal surface of the conduit towards each other and towards a central longitudinal axis of the conduit (FIG.1). Please see marked up figure above.

14. Regarding claim **37**, Houston et al. discloses first and second surfaces that are coupled together at an apex or by a third surface (FIG.1). Please see marked up figure above.

15. Regarding claim **38**, Houston et al. discloses an internal formation having an apex or a third surface that can be a curved if the cross-sectional shape were sinusoidal [0009] (FIG.1).

16. Regarding claim **39**, Palmaz et al. discloses an internal formation having a longitudinally extending member with asymmetric profile and extends along an inside surface of a conduit (column 5, lines 45-50).

17. Regarding claim **40**, Houston et al. discloses a conduit used for implantation or in devices for improving blood circulation (column 7, lines 20-22, FIG. 1).

Art Unit: 3731

18. Regarding claim **41**, Houston et al. discloses a blood flow tubing that is a vascular prosthesis (column 3, lines 12-14).
19. Regarding claim **42**, Houston et al. discloses a vascular prosthesis that is a graft (column 3, line 39-41).
20. Regarding claim **43**, Houston et al. discloses a vascular prosthesis that is a stent (column 3, lines 42-46).
21. Regarding claim **44**, Houston et al. discloses a vascular prosthesis that is a graft/stent combination (column 3, line 39-41).
22. Regarding claim **46**, Houston et al. discloses a fluid as being a liquid (column 4, lines 27-29).
23. Regarding claim **47**, Houston et al. discloses a conduit having two or more internal formations (FIG. 1).
24. Regarding claim **48**, Houston et al. discloses formations that are in parallel around the conduit (Figs. 2, 4) wherein the formations extend in the same direction and do not intersect.
25. Regarding claim **49**, Houston et al. discloses formations being in series around the circumference of the conduit (FIG. 2).
26. Regarding claim **50**, Houston et al. discloses formations that differ in height and/or the angle of the first and/or second faces by selecting ridges having various shapes or sizes (column 2, lines 3-5).

27. Regarding claim **51 and 52**, Houston et al. discloses formations differing in the angle of first faces and second faces wherein the ridging may taper in the direction of flow or in the opposite direction [0012].

Response to Arguments

2. Applicant's arguments filed 18 August 2009 have been fully considered but they are not persuasive. The Applicant contends that Palmaz is not in the same technical field as the device of Houston since Palmaz is an intravascular stent and the passages of Houston that are referenced fails to relate to a stent. However, Houston discloses that the tubing may be utilized for a stent [0021, 0022]. The Applicant contends that it would be illogical to apply features of the grooves of Palmaz to the ridges of Houston. However, Houston discloses ridging and/or grooving that may be of any cross-sectional shape and size [0009]. Palmaz teaches various shapes and sizes including symmetrical or asymmetrical patterns that may be applied to grooves in or on the inner surface of the stent (column 5, lines 45-48, column 6, lines 27-31). The various shapes and sizes would be obvious to apply to ridges as well. Therefore, the Palmaz reference is used to suggest that asymmetrical and symmetrical patterns may be included in Houston's suggestion of any cross-sectional shape and size of ridging and/or grooving. In response to applicant's argument that the purpose of the groove in Palmaz is completely different from the purpose of grooving disclosed in Houston, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences

Art Unit: 3731

would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOCELIN C. TANNER whose telephone number is (571)270-5202. The examiner can normally be reached on Monday through Thursday between 9am and 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anhtuan Nguyen can be reached on 571-272-4963. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3731

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jocelin C. Tanner/
10/26/2009
Examiner, Art Unit 3731

/Anhtuan T. Nguyen/
Supervisory Patent Examiner, Art Unit 3731
11/3/09